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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,803

08/25/2003

Douglas Curry

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EXAMINER

KAU, STEVEN Y

ART UNIT

PAPER NUMBER

2625

NOTIFICATION DATE

DELIVERY MODE

09/04/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction27074@oliff.com
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Office Action Summary

Application No.

10/646,803

Applicant(s)

CURRY ET AL.

Examiner

Steven Kau

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-29 is/are allowed.
- 6) ☒ Claim(s) 1-21 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. This Office Action is in responsive to applicant's amendment filed on June 19, 2007.

Response to Arguments

2. This action is responsive to the following communication: an Amendment filed on June 16, 2007.

- Claims 1-10, 12, 13, 18, 22 and 28-30 have been amended.
- Claims 1-30 are pending.
- Applicant's arguments filed on June 19, 2007 have been fully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Granger (US 4,916,545) in view of Amidror et al (Amidror) (US 5,995,638).

Regarding **claim 1**, Granger discloses an electronic graphic art screener, in that teaches that a method for minimizing moire in a halftoned image formed using a halftoner (screener) (Figure 1, col 15, lines 8-17), comprising: determining moire zones in an image {Granger discloses an electronic graphic art screener to suppress moire

patterns, where he teaches and suggests that selection among the distorted fonts (including moiré patterns) can also occur through a process of constrained randomization in which a two-dimensional connectivity is defined between adjacent halftone dot cells occurring throughout the screened image (a full field of image)} (Figures 2, 4-6, col 5, lines 25-6 & col 13, lines 4-20); and adjusting each moire zone in a halftoner memory to reduce a moire intensity profile of the image {Granger teaches and suggests a screener, through which sampling micro pixel (sampling position – memory address) and comparing with a threshold (adjust)} (figures 8 & 9, col 25, lines 61-67, col 26, lines 1-67); wherein the reduced moire intensity profile is below a threshold, and thus moire is minimized {Granger teaches and suggests that the threshold comparator compares the accessed threshold value against the current contone value. In the event the current contone value exceeds the accessed threshold value, then the threshold comparator produces a high level, i.e. "1", bit at its output. Alternatively, if the current contone value is less than or equal to the value of the accessed threshold value, then the comparator produces a low level, i.e. a "0", bit at its output. Inasmuch as the thresholded bit produced by block 860 forms part of the specific bit-mapped halftone dot that is to be printed by the marking engine (to suppress any distorted font and moiré patterns)} (Figure 9, col 26, lines 55-67 & col 27, lines 1-16).

Granger differs from claim 1, in that he does not expressly teach moiré zone in a full field of the image.

Amidror discloses a method and an apparatus, in that he teaches moiré zone in a full field of the image {Amdiror teaches and suggests the intensity of the moiré and line-gratings (moiré zone in a full field of the image)} (Figures 1a, 1b, 1c & 1g, col 8, lines 30-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include moiré zone in a full field of the image taught by Amidror because it can be easier to detect moiré patterns (col 4, lines 15-16).

Regarding **claim 2**, Granger differs from claim 2, in that he does not teach that determining an average moire-moire profile for a given image intensity in at least one moire zone.

Amidror teaches that determining an average moire-moire profile for a given image intensity in at least one moire zone (col 2, lines 24-30 & col 23, lines 51-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include determining an average moire profile for a given image intensity in at least one moire zone taught by Amidror because average each sub-element of each letter appears in most occurrences, and each of the extra sub-elements only appears in a small rate of occurrence, then the influence on the T-convolution will only be negligible, and the resulting moire intensity profile when the master screen is superposed remains almost as clear as in the unaltered case (col 23, lines 60-66).

Regarding **claim 3**, Granger teaches that the halftoner comprises high addressability units (col 25, lines 61-67, col 26, lines 1-67) and adjusting the high addressability units in all moire zones (col 26, lines 55-67 & col 27, lines 1-16).

Regarding **claim 4**, Granger differs from claim 4, in that he does not teach generating an inverse moire profile.

Amidror teaches generating an inverse moire profile (Figures 1g & 1h, col 8, lines 30-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include generating an inverse moire profile taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 5**, Granger differs from claim 5, in that he does not teach that the moire profile includes a plurality of component moire profiles at different frequencies.

Amidror teaches that the moire profile includes a plurality of component moire profiles at different frequencies (col 10, lines 43-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include the moire profile includes a plurality of component moire profiles at different frequencies taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 6**, Granger differs from claim 6, in that he does not teach that the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch.

Granger combines with Amidror disclose substantially the claimed invention as set forth in the discussion above for claim 1, see Figures 2-9.

Granger does not disclose expressly that the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch. Applicant has not disclosed that the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch, which provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the geometric location of an impulse in the spectrum determines the frequency and the direction of the corresponding periodic component in the image, and the amplitude of the impulse represents the intensity of that periodic component in the image taught by Amidror (col 6, lines 24-36) because the fact that the eye cannot distinguish fine details above a certain frequency (i.e. below a certain period) suggests that the human visual system model includes a low-pass filtering stage.

Therefore, it would have been obvious to combine the frequencies are in a range from about 0.1 cycles per inch to about 100 cycles per inch to one of ordinary skill in this art to modify Granger with Amidror to obtain the invention as specified in claim 6.

Regarding **claim 7**, Granger differs from claim 7, in that he does not teach that zeroing the moire profile in all zones for a given image intensity level.

Amidror teaches that zeroing the moire profile in all zones {e.g. small regions} for a given image intensity level (col 16, lines 49-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include zeroing the moire profile in all zones taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 8**, Granger differs from claim 8, in that he does not teach that comprising zeroing the moire profile in all zones for a predetermined number of image intensity levels (col 16, lines 49-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include zeroing the moire profile in all zones for a predetermined number of image intensity levels in all zones taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 9**, Granger teaches that the high addressability units further comprises determining moire adjustment values which are based on a folded zone equation (figures 8 & 9, col 25, lines 61-67, col 26, lines 1-67).

Regarding **claim 10**, Granger teaches that adjusting the high addressability units comprises repeated adjusting (figures 8 & 9, col 25, lines 61-67, col 26, lines 1-67).

Regarding **claim 11**, Granger teaches that storing results of the adjusting in the half-loner (Figure 9, col 30, lines 15-21).

Regarding **claim 12**, Granger differs from claim 12, in that he does not teach that determining the moire zones in the full field of the image comprises using a full-field moire intensity function.

Amidror teaches that determining the moire zones in the full field of the image comprises using a full-field moire intensity function (col 16, lines 49-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include determining the moire zones in the full field of the image comprises using a full-field moire intensity function taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 13**, Granger differs from claim 13, in that he does not teach that defining a moire intensity function as having at least one sinusoidal component {e.g. Fourier approach} (col 8, lines 30-37).

Amidror teaches that defining a moire intensity function as having at least one sinusoidal component (col 16, lines 49-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include defining a moire intensity function as having at least one sinusoidal component taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 14**, Granger teaches that the moire is due to use of irrational halftone dots (col 13, lines 21-35).

Regarding **claim 15**, Granger differs from claim 15, in that he does not teach that determining at least one of a frequency and an angle of the moiré.

Amidor teaches that determining at least one of a frequency and an angle of the moiré (col 7, lines 50-55).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include determining at least one of a frequency and an angle of the moiré taught by Amidor because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 16**, Granger differs from claim 16, in that he does not teach that determining an intensity of the moire as a function of a halftoner addressability unit.

Amidor teaches that determining an intensity of the moire as a function of a halftoner addressability unit (col 16, lines 46-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include determining an intensity of the moire as a function of a halftoner addressability unit taught by Amidor because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 17**, Granger teaches that outputting halftone images (col 30, lines 8-12).

Regarding **claim 18**, Granger teaches that determining which output image has a lowest observable moiré (col 41, lines 59-67 & col 42, lines 1-5).

Regarding **claim 19**, Granger teaches that determining moire amplitude within a two-dimensional {e.g. X & Y dimensions} halftone coordinate system (col 24, lines 41-54).

Regarding **claim 20**, Granger teaches that generating the halftone image using irrational halftone angles (Figures 4-6).

Regarding **claim 21**, Granger differs from claim 21, in that he does not teach that generating a simulated output image; and evaluating the simulated output image.

Amidror teaches that generating a simulated output image (col 30, lines 10-13); and evaluating the simulated output image (col 30, lines 13-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include generating a simulated output image, and evaluating the simulated output image taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Regarding **claim 30**, Granger differs from claim 30, in that he does not teach that the image forming device is a hyperacuity image forming device.

Amidror teaches that the image forming device is a hyperacuity image forming device ((col 30, lines 10-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Granger to include the image forming device is a hyperacuity image forming device taught by Amidror because it enables to extract moiré intensity profile (col 10, lines 12-27).

Allowable Subject Matter

5. Claims 22-29 are allowed.

The following is an examiner's statement of reasons for allowance:

The primary reasons for allowance for claims 22 and 29 are the inclusion of the limitation of an image forming device and a device having halftoner memory usable to minimize moiré in a halftone image containing halftone cells comprising a moire phase angle zone determiner that determines moire amplitude for a full field of the image and a folded field of a halftoner memory; a comparator that compares the full field moire phase angle zones to moire phase angle zones in the folded field of the halftoner memory; an adjustor that adjusts high addressability units of the halftoner memory to reduce a moire intensity profile of the image on a halftone cell basis; and a modulator that modulates a light beam to generate an output image having the minimized moiré wherein the reduced moire intensity profile is below a threshold, and thus moire is minimized. The closest prior arts are Granger, Amidror, Tada, Yoshidome and Shimotohno. The above claimed limitations neither alone nor combined were taught, found, nor suggested by the prior parts.

Claims 23-28 are allowable because these claims are dependent claims to claim 22.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not


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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on Monday to Friday, from 8:30 am -5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Kau 
Patent Examiner
Division: 2625
August 24, 2007


KING Y. POON
SUPERVISORY PATENT EXAMINER